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Metal Oxide Surface Modification for Organic Photovoltaics K. XERXES STEIRER, Colorado School of Mines, DAVID S. GINLEY, REUBEN T. COLLINS — Organic photovoltaics devices may pose one of the least expensive routes toward conversion of solar power. Two significant obstacles are low intrinsic material stabilities as well as poor interfacial charge transfer kinetics between the transparent conducting oxide and organic semiconductor. Presented is a series of investigations for several surface preparations on a popular metal-oxide (indium tin oxide) using cyclic voltammetry, four-point probe, work function, and contact angle measurement techniques. Surface treatments are correlated with device results in a prototypical organic photovoltaic architecture with an eye toward enhanced charge transfer and material stability at the metal-oxide/organic interface. Included is an overview of main organic photovoltaic operation and degradation mechanisms in the context of surface modification studies.

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